What is claimed is:

1.   A part sorting system for automatically inspecting a plurality of uninspected parts, the system sorting acceptable parts from defective parts, the system comprising:

a feed conveyer for receiving a plurality of uninspected parts, the feed conveyor moving the uninspected parts through an inspection area;

a sorting camera for capturing an image of each of the plurality of uninspected parts as the plurality of uninspected parts move through the inspection area;

at least one rejection valve, the rejection valve functioning to direct a defective part such that the defective part is separated from inspected acceptable parts; and

a computer system, including:

a processor coupled to the feed conveyer, the sorting camera and the at least one rejection valve, wherein the processor executes an inspection routine that controls the speed of the feed conveyer, the scanning rate of the sorting camera and the at least one rejection valve, and wherein the processor executing the inspection routine compares only edge pixels of the captured image to at least one stored template image to determine whether each of the uninspected parts is defective.

2.   The system of claim 1, further including:

a vibratory conveyor including a platform having a top surface and a bottom surface, the vibratory conveyor distributing the plurality of uninspected parts in a substantially even manner across the top surface of the platform and providing the plurality of uninspected parts to the feed conveyer.

3.   The system of claim 2, wherein the top surface of the platform is made of a metal that is substantially covered with a material, the material serving to increase the energy absorption and surface friction of the top surface of the platform.

4.   The system of claim 3, wherein the vibratory conveyor further includes:

a plurality of resilient fiberglass legs mechanically coupled to and supporting the bottom surface of the platform; and

an air cylinder mechanically coupled to the bottom surface of the platform, the air cylinder varying the magnitude and frequency of the vibration of the platform in response to the processor.

5.   The system of claim 1, further including:

a height sensor coupled to the processor and positioned adjacent the inspection area, the height sensor providing an indication of the height of each of the plurality of uninspected parts to the processor.

6.   The system of claim 1, further including:

a light source for backlighting the plurality of uninspected parts as the plurality of uninspected parts move through the inspection area, the backlighting enhancing the ability of the sorting camera to capture gray scale images of each of the plurality of uninspected parts.

7.   The system of claim 6, wherein the light source is provided via a plurality of optical fibers.

8.   The system of claim 1, further including:

a hopper for receiving the plurality of uninspected parts, the hopper providing the uninspected parts to the vibratory conveyor responsive to the processor.

9.   The system of claim 1, wherein the sorting camera is a line scan charge coupled device (CCD) camera.

10.   The system of claim 1, wherein the sorting camera is a line scan complementary metal-oxide semiconductor (CMOS) camera.

11. The system of claim 1, further including:

an electric motor coupled to the processor, the electric motor driving the feed conveyer responsive to the processor; and

an encoder coupled to the processor, the encoder providing an indication of the speed of the motor and hence the associated speed of the feed conveyor, wherein the processor sets a scan rate for the sorting camera responsive to the speed of the feed conveyor.

12. A method for automatically inspecting a plurality of uninspected parts and sorting acceptable parts from defective parts, the method comprising the steps of:

moving a plurality of uninspected parts through an inspection area;

capturing an image of each of the plurality of uninspected parts as the plurality of uninspected parts move through the inspection area;

comparing only edge pixels of the captured image of each of the plurality of uninspected parts to at least one stored template image to determine whether each of the uninspected parts is defective; and

directing a defective part such that the defective part is separated from inspected acceptable parts.

13. The method of claim 12, wherein the plurality of uninspected parts are distributed in a substantially even manner across a top surface of a platform of a vibratory conveyor which provides the plurality of uninspected parts to a feed conveyer.

14. The method of claim 13, wherein the top surface of the platform is made of a metal that is substantially covered with a material, the material serving to increase the energy absorption and surface friction of the top surface of the platform.

15. The method of claim 14, wherein the vibratory conveyor further includes a plurality of resilient fiberglass legs mechanically coupled to and supporting a bottom surface of the platform and an air cylinder mechanically coupled to the bottom surface of the platform, the air

cylinder varying the magnitude and frequency of the vibration of the vibratory conveyor in response to the processor.

16.   The method of claim 12, further including the step of:

determining the height of each of the plurality of uninspected parts.

17.   The method of claim 12, further including the step of:

backlighting the plurality of uninspected parts as the plurality of uninspected parts move through the inspection area, the backlighting enhancing the ability of a sorting camera to capture gray scale images of each of the plurality of uninspected parts.

18.   The method of claim 12, further including:

setting a scan rate for a sorting camera responsive to the speed of a feed conveyor, wherein the sorting camera captures an image of each of the plurality of uninspected parts and the feed conveyor distributes and moves the uninspected parts through an inspection area.

19.   A sorting system for automatically inspecting a plurality of uninspected objects, the system sorting acceptable objects from defective objects, the system comprising:

a feed conveyer for receiving a plurality of uninspected objects, the feed conveyor moving the uninspected objects through an inspection area;

a sorting camera positioned adjacent the inspection area, the sorting camera for capturing an image of each of the plurality of uninspected objects as the plurality of uninspected objects move through the inspection area;

at least one rejection valve positioned for directing a defective object such that the defective object is separated from inspected acceptable objects;

a light source positioned for backlighting the plurality of uninspected objects as the plurality of uninspected objects move through the inspection area, wherein the inspection area is not located on a belt of the feed conveyor; and

a computer system, including:

a processor coupled to the feed conveyer, the sorting camera, the at least one rejection valve and the light source, wherein the processor executes an inspection routine that controls the speed of the feed conveyer, the scanning rate of the sorting camera, the at least one rejection valve and the light provide by the light source, and wherein the processor executing the inspection routine compares the captured image to at least one stored template image to determine whether each of the uninspected objects is defective.

20.   The system of claim 20, wherein the processor only compares edge pixels of the captured image to the at least one stored template image to determine whether each of the uninspected objects is defective.